

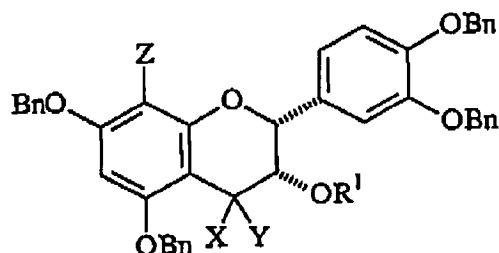
Ser. No. 10/783,801
Gibbons 105942-53920

LISTING OF THE CLAIMS:

This listing of claims replaces all prior versions and listings of claims in this application.

Claims 1-21 (canceled)

Claim 22 (previously presented) A compound having the formula:



wherein R¹ is a silyl protecting group or a benzyl protecting group, wherein X and Y are independently hydrogen or hydroxy, and wherein Z is a hydrogen.

Claims 23-24 (canceled)

Claim 25 (previously presented) The compound of Claim 22, wherein R¹ is the silyl protecting group.

Claim 26 (previously presented) The compound of Claim 25, wherein the silyl group is a *tert*-butyldimethylsilyl group.

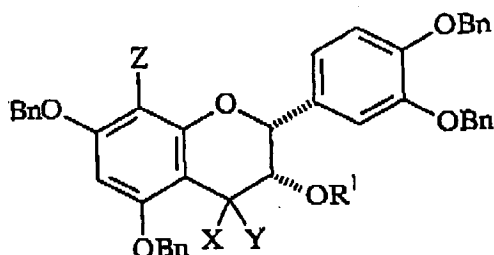
Claim 27 (previously presented) The compound of Claim 22, wherein R¹ is the benzyl protecting group.

Claims 28-30 (canceled)

Claim 31 (previously presented) The compound of Claim 22, which is 3, 5, 7, 3', 4'-penta-O-benzyl-4-hydroxyepicatechin or 5, 7, 3', 4'-tetra-O-benzyl-3-O-(*tert*-butyldimethylsilyl)-4-hydroxyepicatechin.

Ser. No. 10/783,801
Gibbons 105942-53920

Claim 32 (previously presented) A compound having the formula:



wherein R¹ is a silyl protecting group or a benzyl protecting group, wherein X and Y together are oxygen, and wherein Z is hydrogen.

Claim 33 (currently amended) The compound of Claim 32, wherein [[R1]] R¹ is the silyl protecting group.

Claim 34 (previously presented) The compound of Claim 33, wherein the silyl group is a *tert*-butyldimethylsilyl group.

Claim 35 (currently amended) The compound of Claim 32, wherein [[R1]] R¹ is the benzyl protecting group.

Claim 36 (currently amended) The compound of Claim 32, which is ~~(2R,3S)-3,5,7,3',4'-pentakis-(benzyloxy)flavan-4-one~~ (2R,3S)-3,5,7,3',4'-pentakis-(benzyloxy)flavan-4-one or ~~(2R,3S)-5,7,3',4'-tetra-O-benzyl-3-O-[(*tert*-butyldimethylsilyl)-oxy]flavan-4-one~~ (2R,3S)-5,7,3',4'-tetra-O-benzyl-3-O-[(*tert*-butyldimethylsilyl)oxy]flavan-4-one.

Claim 37 (previously presented) A process for preparing epicatechin-(4 α ,8)-catechin dimer, which process comprise the steps of:

- (a) protecting the 3-hydroxyl group of 5,7,3',4'-tetra-O-benzyl-epicatechin with a benzyl protecting group to form 3,5,7,3',4'-penta-O-benzyl-epicatechin;
- (b) oxidizing the C-4 position of the epicatechin of step (a) to form 3,5,7,3',4'-penta-O-benzyl-4-hydroxy-epicatechin;

Ser. No. 10/783,801
Gibbons 105942-53920

- (c) oxidizing the C-4 hydroxyl group of the epicatechin of step (b) to form (2R,3S)-3,5,7,3',4'-penta-O-benzyl-4-ketone-epicatechin;
- (d) adding *tert*-butyl lithium to 3,5,7,3',4'-penta-O-benzyl-8-bromo-catechin to form a catechin-lithium reagent;
- (e) adding the epicatechin from step (c) to the catechin-lithium reagent from step (d) to form 3,5,7,3',4'-penta-O-benzyl-4-hydroxy-epicatechin-(4 α ,8)-(3,5,7,3',4'-penta-O-benzyl)-catechin dimer;
- (f) reducing the C-4 hydroxyl group of the dimer from step (e) to form 3,5,7,3',4'-penta-O-benzyl-epicatechin-(4 α ,8)-(3,5,7,3',4'-penta-O-benzyl)-catechin dimer; and
- (g) replacing the benzyl groups of the dimer of step (f) with hydrogen to form the epicatechin-(4 α ,8)-catechin dimer

Claim 38 (previously presented) A process for preparing 5,7,3',4'-tetra-O-benzyl-3-O-(*tert*-butyldimethylsilyl)-epicatechin-4 α ,8-[5,7,3',4'-tetra-O-benzyl-3-O-(*tert*-butyldimethylsilyl)-catechin dimer comprises the steps of:

- (a) protecting the C-3 hydroxyl group of 5,7,3',4'-tetra-O-benzylepicatechin with a *tert*-butyldimethylsilyl group to form 5,7,3',4'-tetra-O-benzyl-C-3-O-(*tert*-butyldimethylsilyl)-epicatechin;
- (b) oxidizing the C-4 position of the epicatechin from step (a) to form 5,7,3',4'-tetra-O-benzyl-3-O-(*tert*-butyldimethylsilyl)-4-hydroxy-epicatechin;
- (c) oxidizing the C-4 hydroxyl group of the epicatechin from step (b) to form (2R,3S)-5,7,3',4'-tetra-O-benzyl-3-O-(*tert*-butyldimethylsilyl)-4-ketone-epicatechin;
- (d) adding *tert*-butyllithium to 5,7,3',4'-tetra-O-benzyl-8-bromo-3-O-(*tert*-butyldimethylsilyl)-catechin to form a catechin-lithium reagent;

Ser. No. 10/783,801
Gibbons 105942-53920

(e) adding the epicatechin from step (c) to the catechin-lithium reagent from step (d) to form 5,7,3',4'-tetra-O-benzyl-3-O-(*tert*-butyldimethylsilyl)-4-hydroxy-epicatechin-4 α ,8-[5,7,3',4'-tetra-O-benzyl-3-O-(*tert*-butyldimethylsilyl)-catechin dimer;

(f) reducing the C-4 hydroxyl group of the dimer from step (e) to form the 5,7,3',4'-tetra-O-benzyl-3-O-(*tert*-butyldimethylsilyl)-epicatechin-4 α ,8-[5,7,3',4'-tetra-O-benzyl-3-O-(*tert*-butyldimethylsilyl)]-catechin dimer.

Claim 39 (previously presented) A process for preparing an epicatechin-(4 α ,8)-(3-O-acyl)-catechin dimer comprises the steps of:

(a) protecting the C-3 hydroxyl group of 5,7,3',4'-tetra-O-benzyl-epicatechin with a *tert*-butyldimethylsilyl group to form 5,7,3',4'-tetra-O-benzyl-C-3-O-(*tert*-butyldimethylsilyl)-epicatechin;

(b) oxidizing the C-4 position of the epicatechin from step (a) to form 5,7,3',4'-tetra-O-benzyl-3-O-(*tert*-butyldimethylsilyl)-4-hydroxy-epicatechin;

(c) oxidizing the C-4 hydroxyl group of the epicatechin from step (b) to form (2R,3S)-5,7,3',4'-tetra-O-benzyl-3-O-*tert*-butyldimethylsilyl-4-ketone-epicatechin;

(d) adding *tert*-butyl lithium to 5,7,3',4'-tetra-O-benzyl-8-bromo-3-O-(*tert*-butyldimethylsilyl) catechin to form a catechin-lithium reagent;

(e) adding the epicatechin from step (c) to the catechin-lithium reagent from step (d) to form 5,7,3',4'-tetra-O-benzyl-3-O-(*tert*-butyldimethylsilyl)-4-hydroxy-epicatechin-(4 α ,8)-[5,7,3',4'-tetra-O-benzyl-3-O-(*tert*-butyldimethylsilyl)]-catechin dimer;

(f) reducing the C-4 hydroxyl group of the dimer from step (e) to form 5,7,3',4'-tetra-O-benzyl-3-O-(*tert*-butyldimethylsilyl)-epicatechin-(4 α ,8)-[5,7,3',4'-tetra-O-benzyl-3-O-(*tert*-butyldimethylsilyl)]-catechin dimer;

Ser. No. 10/783,801
Gibbons 105942-53920

(g) replacing the *tert*-butyldimethylsilyl protecting groups of the dimer of step (f) with hydrogen to form 5,7,3',4'-tetra-O-benzyl-epicatechin-(4 α ,8)-(tetra-O-benzyl-catechin)-dimer;

(h) acylating the 3-OH position of the dimer of step (g) with an activated acid or an acid chloride to form a 5,7,3',4'-tetra-O-benzyl-epicatechin-(4 α ,8)-[5,7,3',4'-tetra-O-benzyl-(3-O-acyl) catechin]-dimer; and

(i) replacing the benzyl protecting groups of the dimer from step (h) with hydrogen to form the epicatechin -(4 α ,8)-(3-O-acyl)-catechin dimer.

Claim 40 (previously presented) The process of Claim 37, wherein the protecting step (a) is carried out with benzyl bromide in the presence of sodium hydride; wherein the oxidizing step (b) is carried out with 2,3-dichloro-5,6-dicyano-*p*-benzoquinone and 4-(dimethylamino) pyridine; wherein the oxidizing step (c) is carried out with tetrapropylammonium perruthenate and N-methylmorpholine-N-oxide; wherein the reducing step (f) is carried out with tri-*n*-butyltin hydride followed by trifluoroacetic acid; and wherein the benzyl replacement step (g) is carried out by hydrogenation in the presence of palladium hydroxide on carbon.

Claim 41 (previously presented) The process of Claim 38, wherein the protecting step (a) is carried out with *tert*-butyldimethylsilyl chloride; wherein the oxidizing step (b) is carried out with 2,3-dichloro-5,6-dicyano-*p*-benzoquinone and 4-(dimethylamino) pyridine; wherein the oxidizing step (c) is carried out with N-methylmorpholine-N-oxide and tetrapropylammonium perruthenate; and wherein the reducing step (f) is carried out with tri-*n*-butyltin hydride and trifluoroacetic acid.

Ser. No. 10/783,801
Gibbons 105942-53920

Claim 42 (previously presented) The process of Claim 39, wherein the protecting step (a) is carried out with *tert*-butyldimethylsilyl chloride; wherein the oxidizing step (b) is carried out with 2,3-dichloro-5,6-dicyano-*p*-benzoquinone and 4-(dimethylamino) pyridine; wherein the oxidizing step (c) is carried out with N-methylmorpholine-N-oxide and terapropylammonium perruthenate; wherein the reducing step (f) is carried out with tri-*n*-butyltin hydride and trifluoroacetic acid; wherein the *tert*-butyldimethylsilyl replacement step (g) is carried out with hydrofluoric acid; and wherein the benzyl replacement step (i) is carried out by hydrogenation in the presence of palladium hydroxide on carbon.

Claim 43 (previously presented) The process of Claim 39, wherein the acid is selected from group consisting of caffeic, coumaric, ferulic, and sinapic acid.

Claim 44 (previously presented) The process of Claim 39, wherein the acid is a hydroxy-protected acid selected from the group consisting of cinnamic acid, gallic acid, and hydroxybenzoic acid.

Claim 45 (previously presented) The process of Claim 39, wherein the acid is tri-*O*-benzylgallic acid and the epicatechin-(4 α , 8)-(3-*O*-acyl)-catechin dimer is epicatechin-4 α , 8-(3-*O*-galloyl)-catechin dimer.

Claim 46 (currently amended) A protected dimer selected from the group consisting of 5,7,3',4'-tetra-*O*-benzyl-3-*O*-(*tert*-butyldimethylsilyl)-epicatechin-(4 α , 8)-[5,7,3',4'-tetra-*O*-benzyl-3-*O*-(*tert*-butyldimethylsilyl)]-catechin; 3,5,7,3',4'-penta-*O*-benzyl-epicatechin-(4 α , 8)-(3,5,7,3',4'-penta-*O*-benzyl-catechin); and 5,7,3',4'-tetra-*O*-benzyl-epicatechin-(4 α , 8)-(5,7,3',4'-tetra-*O*-benzyl-catechin).

Claim 47 (previously presented) A protected epicatechin-(4 α , 8)-catechin dimer having a 4-hydroxy group selected from the group consisting of 5,7,3',4'-tetra-*O*-benzyl-3-*O*-

Ser. No. 10/783,801
Gibbons 105942-53920

(*tert*-butyldimethylsilyl)-4-hydroxy-epicatechin-(4 α ,8)-[5,7,3',4'-tetra-O-benzyl-3-O-(*tert*-butyldimethylsilyl)catechin] and 3,5,7,3',4'-penta-O-benzyl-4-hydroxy-epicatechin-(4 α ,8)-(penta-O-benzyl-catechin).

Claim 48 (previously presented) A derivatized 5,7,3',4'-tetra-O-benzyl-epicatechin-(4 α ,8)-(5,7,3',4'-tetra-O-benzyl-catechin) dimer having at least one 3-O-acyl group.

Claim 49 (previously presented) The dimer of Claim 48, wherein the 3-O-acyl group is introduced using an acid selected from the group consisting of caffeic acid, coumaric, ferulic acid, and sinapic acid as a derivatizing agent.

Claim 50 (previously presented) The dimer of Claim 48 which is epicatechin-(4 α ,8)-[(3-O-acyl)-catechin].

Claim 51 (previously presented) The dimer of Claim 48, wherein the 3-O-acyl group is introduced using a hydroxy-protected acid selected from the group consisting of cinnamic acid, gallic acid, and hydroxy-benzoic acid as a derivatizing agent.

Claim 52 (previously presented) The dimer of Claim 51, wherein the 3-O-acyl group is a 3-O-(3,4,5-tri-O-benzylgalloyl) group.

Claim 53 (previously presented) The dimer of Claim 52 which is epicatechin-(4 α ,8)-[(3-O-galloyl)-catechin].

Claim 54 (previously presented) An epicatechin-(4 α ,8)-catechin dimer.